

User's Guide

Creative Sound Blaster PCI512

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September 2000

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- ☐ Directive 89/336/EEC, 92/31/EEC (EMC)

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Creative European Help Line

Introduction

Sound Blaster PCI512 is Creative's entry-level Environmental Audio™ audio card for high quality 3D gaming. It offers SB PCI compatibility, real-time special effects, high quality 4-speaker output, and full environmental support for the largest number of supported titles and applications from the past, present and future.

Powerful Audio Processing Engine

The EMU10K1™ audio processor is the most powerful integrated music, audio and effects engine available. Every signal is processed at 32-bit, 48 kHz using 8-point interpolation to smoothen the sound—instantly improving any audio source. Besides advanced signal processing, the EMU10K1 also provides real-time effects including Reverb, Chorus, Flanger, Echo, and Pitch Shifter, that rival a stand-alone effects processor worth US\$500.

Environmental Audio™ Enhances Existing Contents

Experience depth and realism beyond existing 3D audio. Apply preset environments such as *hall*, *cave* or *underwater* that can be applied to your existing games and applications for incredibly true sound. Game environmental settings also make your existing games come “alive” instantaneously.

Multiple Speaker Output

Produce surround-sound audio on your PC with built-in support for two or four analog speakers.

Sound Blaster PCI Standard

You can be assured of near-perfect Sound Blaster compatibility on the PCI bus while enjoying all its benefits. It works with the existing MS-DOS®-based and Windows®-based titles, providing support on these legacy applications.

System Requirements

For Creative software, your card requires at least:

- ❑ Pentium® class processor:
133 MHz for Windows 95/98/ME,
200 MHz for Windows NT 4.0/
Windows 2000
- ❑ Windows 95, 98 or Windows NT 4.0 or
Windows 2000
- ❑ 16 MB RAM for Windows 95/98/ME
(32 MB RAM recommended),
32 MB RAM for Windows NT 4.0
64 MB RAM for Windows 2000
- ❑ 33 MB of free hard disk space
- ❑ One free PCI bus slot
- ❑ Powered speakers or external amplifier
(recommended: Cambridge SoundWorks
speakers)

Sound Blaster PCI512 gives you an estimate of the hard disk space required when you select it on the installation screen. Some applications may require a system configuration greater than that listed above. Refer to online documentation (README or HLP files) or specifications on the outer box for details.

Before You Begin

The README file on the installation CD-ROM contains information and changes not available at the time of printing. Read the file before you continue.

Getting More Information

See the online *User's Guide* for MIDI specifications and connector pin assignments, as well as instructions on using the various applications in your audio package.

Document Conventions

The following typographical conventions are used throughout this document:

bold	Text that must be entered exactly as it appears.
<i>italic</i>	Title of a book or a placeholder, which represents the information you must provide.
UPPERCASE	Directory name, file name, or acronym.
	The notepad icon indicates information that is of particular importance and should be considered before continuing.
	The exclamation mark icon designates a caution or warning that can help you avoid situations involving risk.

Chapter

Knowing and Installing Your Card

This chapter is organized as follows:

- ❑ On the Audio Card
- ❑ Installing the Card and Related Peripherals
- ❑ Positioning Your Speakers



Jacks are one-hole connecting interfaces whereas connectors consist of many pairs of pins. Some connectors here may not be available on your card. Refer to the online *User's Guide*, “Hardware Information”, for details on connector pin assignments.



Line Out and Rear Out jacks can be used simultaneously to power 4.1 channel speaker systems, for example, the FourPointSurround™ series from Cambridge SoundWorks.

On the Audio Card

Your audio card has these jacks and connectors which allow you to attach other devices:

Telephone Answering Device connector

Provides a mono connection from a standard voice modem, and transmits microphone signals to the modem.

CD Audio connector

Connects to the Analog Audio output on a CD-ROM or DVD-ROM drive using a CD audio cable.

Line In jack (blue)

Connects to external devices (such as a cassette player).

Microphone In jack (red)

Connects to an external microphone for voice input.

Line Out jack (green)

Connects to powered speakers or an external amplifier for audio output. Also supports headphones.

Rear Out jack (black)

Connects to powered speakers or an external amplifier for audio output.

Joystick/MIDI connector

Connects to a joystick or a MIDI device. You can buy an optional MIDI kit that allows you to plug in the joystick and MIDI device simultaneously.

AUX connector

Connects to internal audio sources such as TV Tuner, MPEG, or other similar cards

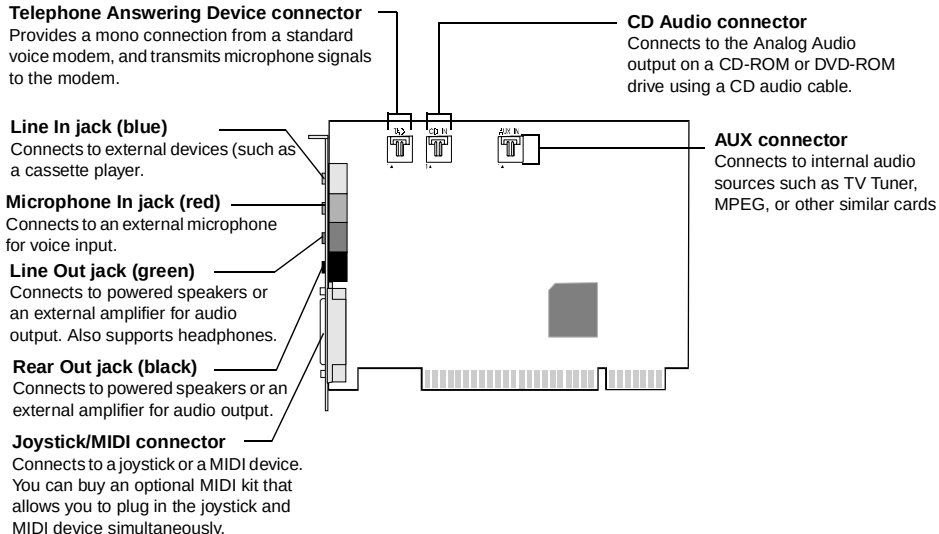


Figure 1-1: Jacks and connectors on the Sound Blaster PCI512 card.

Installing the Card and Related Peripherals

1. Switch off your system and all peripheral devices.
2. Touch a metal plate on your system to ground yourself and to discharge any static electricity, and then unplug the power cord from the wall outlet.
3. Remove the cover from your system.
4. Remove the metal plate from an unused PCI expansion slot in your system and put the screw aside, to be used later.

5. Align the audio card with the vacant PCI expansion slot. Press the card gently and evenly into the slot as shown. Ensure that the card sits firmly inside the PCI expansion slot.

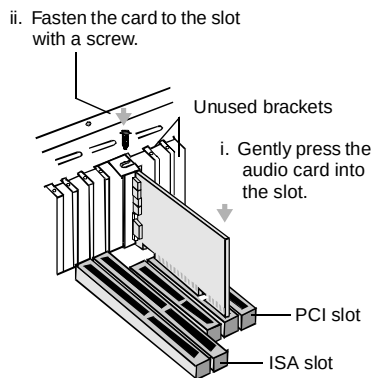


Figure 1-2: Securing the audio card to the PCI expansion slot.



Do not force the audio card into the slot. If it does not fit properly, gently remove it and try again.

6. Secure the card to the expansion slot with a screw.
7. See Figure 1-3 to learn how to connect various devices to your card.



The joystick connector on your audio card is identical to that on a standard PC game control adapter or the game I/O connector. You can connect any analog joystick with a 15-pin D-shell connector or any device compatible with the standard PC joystick. To use two joysticks, you need a Y-cable splitter.

8. Replace the cover onto your system.
9. Plug the power cord back into the wall outlet, and switch on the system.



For a 4-channel speaker system (e.g., the FourPointSurround series by Cambridge SoundWorks), connect its F(ront) plug to the Line Out jack and R(ear) plug to the Rear Out jack.



For headphones or a 2-channel speaker system (e.g., PCWorksTM, SoundWorks[®] or MicroWorksTM): connect to the Line Out jack only.

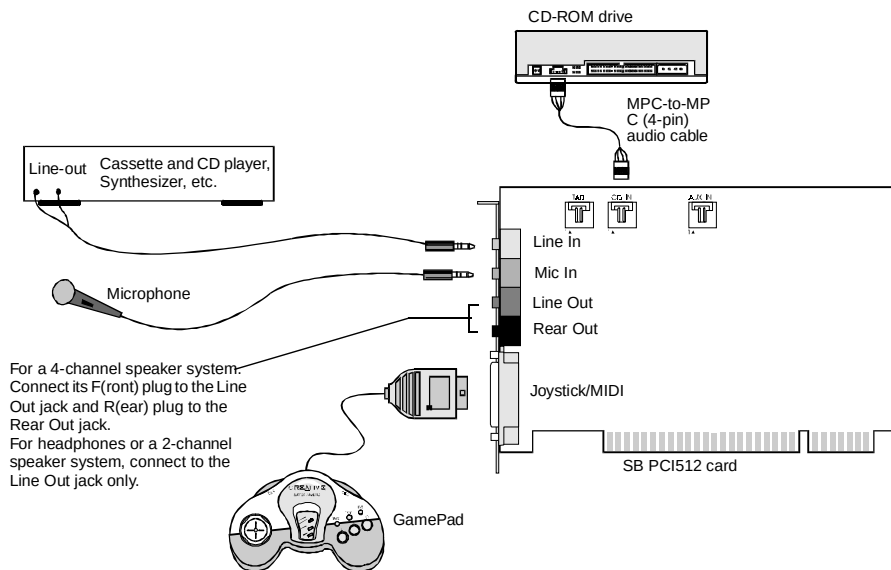


Figure 1-3: Connecting other devices.

Positioning Your Speakers

If you are using four speakers, place them such that they form the corners of a square with you exactly in the center (as in Figure 1-4) and that they are angled toward you. Make sure the computer monitor is not blocking the path of your front speakers. You may want to adjust the relative positions of the speakers until you get the audio experience you like best. If you have a subwoofer, place the unit in a corner of the room for the best bass experience.

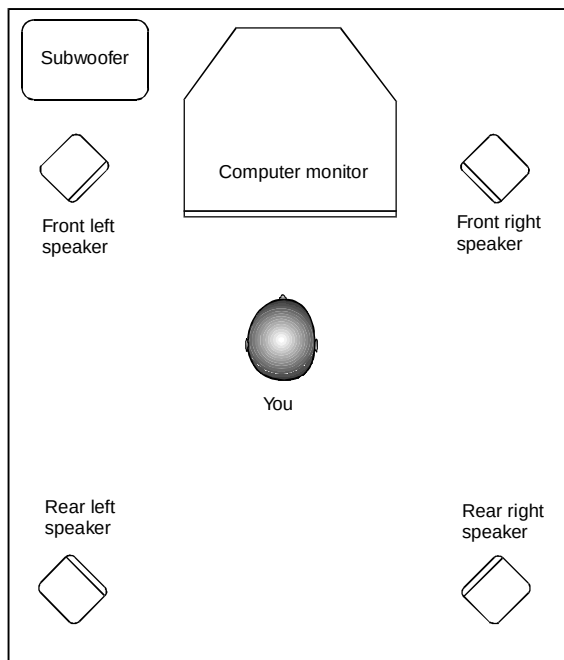


Figure 1-4: Recommended speaker positions for the 4-speaker configuration.

Chapter

Installing Software in Windows 95/98

This chapter shows you how to install the audio software in Windows 95/98 after installing your card. It consists of the following sections:

- ☐ Setting Up the Audio Drivers
- ☐ Installing the Applications
- ☐ Using Sound Blaster PCI512
- ☐ Configuring Your Speakers
- ☐ Uninstalling the Applications
- ☐ Reinstalling the Audio Drivers From the Installation Disc
- ☐ Playing Legacy Games

Setting Up the Audio Drivers

You need device drivers to control the components on your audio card. After you have installed the card and switched on your system, Windows 95/98 automatically detects the components, and then either installs the drivers automatically or prompts you for the

drivers. You may encounter the following messages, which may not be in the sequence shown.

- ☐ If a message similar to Figure 2-1 appears, just take note of it and wait for the next message.

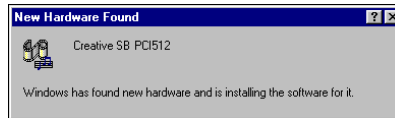


Figure 2-1: Message box indicating the detection of a device.

- ☐ If a dialog box similar to Figure 2-2 appears, click the **Driver from disk provided by hardware manufacturer** option, and then click the **OK** button.



Figure 2-2: Driver installation dialog box where the Windows default driver option is not available.

- ☐ If the **Install From Disk** dialog box or a dialog box similar to Figure 2-3 appears:
 1. Insert the installation disc into your CD-ROM drive and select the drive.

2. If there is a **Specify a location** check box, make sure it is selected and clear the other check boxes.
3. Click the **Browse** button and select the folder **AUDIO\Language\WIN9XDRV** where *Language* is the language of the software that you want to install.
4. Click the **OK** button.
The required files are copied to your hard disk.



Figure 2-3: Windows 98 Add New Hardware Wizard dialog box.

- ❑ If a dialog box similar to Figure 2-4 appears:



Figure 2-4: Update Device Driver Wizard dialog box when driver cannot be found.

1. Click the **Other Locations** button.
2. At the **Select Other Locations** dialog box, click the **Browse** button and select the folder **AUDIO\Language\WIN9XDRV** where *Language* is the language of the software that you want to install.
3. Click the **OK** button, and then click the Finish button.
Some of the required files are copied to your hard disk. However, an error message stating that a file (2MGSM.TSF2 or otherwise) cannot be found also appears.
4. Click the **OK** button.

5. At the **Copying Files** dialog box, click the Browse button and select the folder **AUDIO\Language\WIN9XDRV** where *Language* is the language of the software that you want to install.
 6. Click the **Open** button, and then click the **OK** button twice.
The file is copied to your hard disk.
- ❑ If a dialog box similar to Figure 2-5 appears, click the **Next** button, and follow the instructions on the screen to complete the installation of the driver.

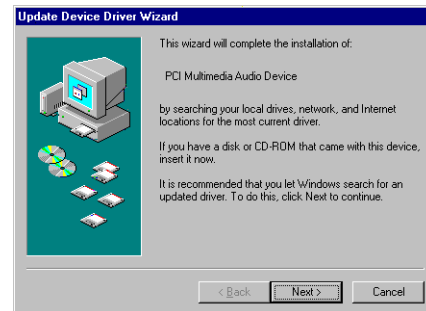


Figure 2-5: Update Device Driver Wizard dialog box at start of installation.

- ❑ If a **Version Conflict** message box appears about VJOYD.VXD and MSJSTICK.DRV, click the Yes button to keep the files.

Installing the Applications

1. If your installation disc is already in your CD-ROM drive, eject the disc and insert it again.

The disc supports Windows AutoPlay mode and starts running automatically. If not, see “Problems Installing Software” on page D-1.

2. Follow the instructions on the screen to complete the installation

Using Sound Blaster PCI512

Every bundled application provides online help to guide you along when you use it.

Creative Launcher is a one-stop shortcut to quickly start your applications. To display Launcher, bring your pointer to the top of the screen.

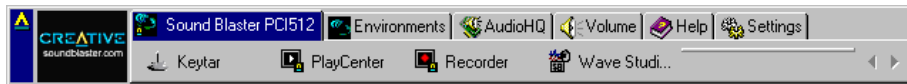


Figure 2-6: Creative Launcher.

Creative PlayCenter allows you to play most types of media—multimedia files (MIDI, Wave, etc.), audio CDs, and Video CDs—using a single player! There is no need to use different players to play different media types. Just insert or select your media and PlayCenter will do the rest.



Figure 2-7: Creative PlayCenter.

To run PlayCenter, bring your pointer to the top of the screen to display Creative Launcher, click your Sound Blaster tab, and then click the PlayCenter icon.

Configuring Your Speakers

1. Bring your pointer to the top of the screen to display Creative Launcher, click the **AudioHQ** tab, and then click the **Speaker** icon. The **Speaker** dialog box appears.
2. On the **Configuration** tabbed page, make sure that the value in the **Output** box corresponds to the number of speakers you are using. For example, if you are using two pairs of speakers, select the “**4 Speakers**” option; if you leave the **Output** value as “**2 Speakers**”, there will be no sound from your rear speakers.



If you have a 4-speaker configuration (2 in the front, 2 in the rear), and there is no sound coming from the rear speakers, open the **Speaker** applet to change to the correct speaker output setting.

3. Using Creative PlayCenter or Windows Media Player, open a Wave file in your computer and play it. In the **Speaker** dialog box, drag the Wave source icon from the **Panning Source** box to each speaker in the Preview box in turn. You should hear the selected sound being played. If you do not, see “Problems With Sound” on page D-1.

Uninstalling the Applications

The Windows Uninstall feature allows you to cleanly remove applications and to reinstall them in order to correct problems, change configurations, or make version upgrades.

To uninstall the applications:

1. Click **Start -> Settings -> Control Panel**.
2. Double-click the **Add/Remove Programs** icon.
3. In the **Add/Remove Programs Properties** dialog box, select the target programs including Sound Blaster PCI512, and then click the **Add/Remove** button.
4. Follow the instructions on the screen to uninstall.



Quit the audio card’s applications before uninstalling. Applications that are still running during uninstallation will not be uninstalled.



Some applications may share files with other Windows applications. If so, the uninstallation program will prompt you when it tries to delete these files. Do not delete the files unless you are sure that you do not need to use them.

Reinstalling the Audio Drivers From the Installation Disc

You may want to reinstall the audio drivers if you think they have been corrupted.

To do so:

1. Insert the installation disc into your CD-ROM drive.
2. Run the UPDDRV95.EXE program from the **AUDIO\Language\WIN9XDRV** folder of your CD-ROM drive, where *Language* is the language of the software that you want to install. The updating process may take a while. When the progress indicator box disappears, the update is complete.

Playing Legacy Games

For more information, see Appendix B, “SB Emulation in MS-DOS/ Window 95/98”.

Chapter

Installing Software in Windows NT 4.0 / Windows 2000 / Windows ME

This chapter shows you how to install the audio software in Windows NT 4.0/Windows 2000 and Windows ME after installing your card. It consists of the following sections:

- ☐ Installing the Software
- ☐ Setting Up Joystick Drivers in Windows NT 4.0
- ☐ Uninstalling Sound Blaster PCI512
- ☐ Reinstalling the Audio Drivers From the Installation Disc



You cannot install more than one Sound Blaster audio card of the same type on your computer.

Installing the Software

The software installation in NT 4.0/Windows 2000/Windows ME includes the installation of audio drivers.

1. Insert the installation disc into your CD-ROM drive.
The AutoPlay screen appears.
2. Follow the instructions on the screen to complete the installation.



Windows 2000 only installs a set of basic audio drivers for your card. To install the latest audio drivers, use the installation CD provided.

Setting Up Joystick Drivers in Windows NT 4.0

1. Log on to your computer as Administrator.
2. Click **Start** -> **Settings** -> **Control Panel**.
3. Double-click the **Multimedia** icon, click the **Devices** tab, and then click the **Add** button.
4. Insert the Windows NT 4.0 CD-ROM which contains the JOYSTICK.SYS file into the CD-ROM drive.
5. In the **List of Drivers** box of the **Add** dialog box, select **Unlisted Or Updated Driver**, and then click the **OK** button.
6. In the **Install Driver** dialog box, type **E:\DRVLIB\MULTIMED\JOYSTICK\X86** if E:\ is the CD-ROM drive letter, and then click the **OK** button.
7. In the **Add Unlisted Or Updated Driver** dialog box, click **Analog Joystick Driver**, and then click the **OK** button.

8. In the **Microsoft Joystick Configuration** dialog box, select your configuration, and then click the **OK** button.
9. Restart your computer when prompted.



In Windows 2000, the joystick drivers are automatically set up.

See “Using Sound Blaster PCI512” on page 2-3 and “Configuring Your Speakers” on page 2-4. They also apply in Windows NT 4.0.

Uninstalling Sound Blaster PCI512

To uninstall the Sound Blaster PCI512 software, follow the steps listed in the section “Uninstalling the Applications” on page 2-4. They also apply in Windows NT 4.0/Windows 2000 and Windows ME.

Reinstalling the Audio Drivers From the Installation Disc

You may want to reinstall the audio drivers if you think they are corrupted.

Windows NT 4.0

1. Insert the installation CD into your CD-ROM drive.
2. Run the UPDPCINT.EXE program from the **AUDIO\Language\NT4DRV** folder of your CD-ROM drive, where *Language* is the language of the software that you want to install.
3. Restart your computer when prompted. You may be prompted to restart more than once.
4. If a Windows NT 4.0 Service Control Manager error message appears, see “Resolving I/O Conflicts” on page D-3.

Windows 2000 / Windows ME

1. Insert the installation disc into your CD-ROM drive.
2. Click **Start -> Settings -> Control Panel**.
3. Double-click the **System** icon.
4. In the dialog box that appears, click the **Hardware** tab and then click the **Device Manager** button.

5. On the **Devices** tabbed page, expand the **Sound, video and game controllers** branch.
6. Select **Creative SB PCI512 (WDM)**, and then click the **Properties** button.
7. On the **Driver** tabbed page, click the **Update Driver** button.
8. In the **Upgrade Device Driver Wizard** dialog box, click the **Next** button.
9. In the dialog box that appears, select the **Display a list of the known drivers for this device so that I can choose a specific driver** option, and then click the **Next** button.
10. In the dialog box that appears, click the **Have Disk** button.
11. In the **Install from Disk** dialog box, click the **Browse** button to browse to the **AUDIO_W\Language\WDMDRV or AUDIO\Language\WINMEDRV** folder of your CD-ROM drive, where *Language* is the language of the software that you want to install, and then click the **OK** button.
12. In the **Upgrade Device Driver Wizard** dialog box, select **Creative Sound Blaster PCI512**, and then click the **Next** button twice.
13. In the dialog box that appears, click the **Yes** button.
14. Click the **Finish** button.

Appendix

General Specifications

This section lists the specifications of your card.

Features

PCI Bus Mastering

- ❑ PCI Specification Version 2.1 compliant
- ❑ Bus mastering reduces latency and speeds up system performance

EMU10K1

- ❑ Advanced hardware accelerated digital effects processing
- ❑ 32-bit digital processing while maintaining a 192 dB dynamic range
- ❑ Patented 8-point interpolation that achieves the highest quality of audio reproduction
- ❑ 64-voice hardware wavetable synthesizer
- ❑ Professional-quality digital mixing and equalization

Stereo Digitized Voice Channel

- ❑ True 16-bit Full Duplex operation
- ❑ 16-bit and 8-bit digitizing in stereo and mono modes
- ❑ Playback of 64 audio channels, each at an arbitrary sample rate
- ❑ ADC recording sampling rates: 8, 11.025, 16, 22.05, 24, 32, 44.1 and 48 kHz
- ❑ Dithering for 8-bit and 16-bit recording

AC '97 Codec Mixer

- ❑ Mixes EMU10K1 audio sources and analog sources such as CD Audio, Line In, Microphone, Auxiliary, and TAD
- ❑ Selectable input source or mixing of various audio sources for recording
- ❑ High quality Analog-to-Digital conversion of analog inputs at 48 kHz sample rate

Volume Control

- ❑ Software record and playback control of Master, Digitized Voice, and inputs from MIDI device, CD Audio, Line, Microphone, Auxiliary, TAD, and Wave/DirectSound device
- ❑ Separate bass and treble control
- ❑ Front and Rear Balance control
- ❑ Muting and balance control for individual playback sources

Connectivity

Audio Inputs

- ❑ One line-level analog Line input via (blue) stereo jack on rear bracket
- ❑ One mono Microphone analog input via (red) stereo jack on rear bracket
- ❑ CD_IN line-level analog input via 4-pin Molex connector on card
- ❑ AUX_IN line-level analog input via 4-pin Molex connector on card
- ❑ TAD line-level analog input via 4-pin Molex connector on card

Audio Outputs

- ❑ Two line-level analog outputs via stereo jacks on rear bracket, Front and Rear Line-Outs
- ❑ Stereo headphone (32-ohm load) support on Front Line-Out

Appendix

SB Emulation in MS-DOS/ Window 95/98

This appendix is organized as follows:

- ☐ Background
- ☐ Understanding the Installation Program in Windows 95/98
- ☐ Understanding the System Resource Settings
- ☐ Understanding the Environment Variables
- ☐ Determining Resources
- ☐ Selecting the Best Audio Options in a Game
- ☐ MS-DOS Mode Utilities

Background

Legacy games in the market have been designed for only MS-DOS. SB PCI512 supports MS-DOS games. There are two ways to play MS-DOS games:

- ☐ **From the MS-DOS box in Windows 95/98**

This is the recommended method.

To open the box:

- Click the Start button on the taskbar of Windows 95/98, point to Programs, and then click MS-DOS Prompt.
- ☐ **In the Windows 95/98 MS-DOS mode**
There could be times when you do not want to or cannot run a game from the MS-DOS box. The game may be incompatible with Windows 95/98, or there is insufficient system resources to play the game with Windows 95/98 loaded. In such cases, use the MS-DOS mode, in which only the real-mode portions of Windows 95/98 are loaded.

To restart the system in MS-DOS mode when you are already in Windows 95/98:

1. Click the Start button on the taskbar, and then click Shutdown.
2. Click the Restart The Computer In MS-DOS Mode option button, and then click the OK button.

To start the system in MS-DOS mode at system startup:

1. At startup as Windows 95/98 is loading, hold the F8 key.
2. At the startup menu, choose the Command Prompt Only option, and then press <Enter>.

Understanding the Installation Program in Windows 95/98

The installation program modifies your AUTOEXEC.BAT and CONFIG.SYS files.

The AUTOEXEC.BAT File Settings

The installation program adds the following statements to the AUTOEXEC.BAT file:

```
SET CTSYN=C:\WINDOWS
SET BLASTER=A220 I5 D1 H5 P330 T6
C:\PROGRA~1\CREATIVE\SBPCI512\DOSDRV\SBEINIT.
COM
```

The first two statements set up the environment variables for your audio card. For an explanation of the variables, see “Understanding the Environment Variables” on page B-3.

The third statement runs the SBEINIT.COM driver. SBEINIT.COM is the SB PCI512 MS-DOS driver. It is required for the SB PCI512 card to function properly under MS-DOS mode. The syntax for the statement is as follows:

```
<SB PCI512 path>\SBEINIT.COM
```

SBEINIT.COM requires that the HIMEM.SYS and EMM386.EXE files are loaded. If needed, the installation program adds the necessary HIMEM.SYS and EMM386.EXE lines to your CONFIG.SYS file, creating the file if it is not present.

On the rare occasion a program does not work with expanded memory, simply add the NOEMS parameter to your memory manager. For example:

```
DEVICE=C:\WINDOWS\EMM386.EXE NOEMS
```

if C:\WINDOWS is your Windows directory.

You may load this driver into high memory in the AUTOEXEC.BAT file, even though the default is not. For example:

```
LOADHIGH=C:\PROGRA-1\CREATIVE\SBPCI512\DOSDRV\SBEINIT.COM
```

Do not remove the memory manager altogether. Do not attempt to load SBEINIT.COM into high memory when using the NOEMS option if SBEINIT.COM fails to run SBELOAD.EXE or SBECFG.EXE.

In the rare case that an MS-DOS game will not work with a memory manager, you will not be able to use the SB PCI512 card with the game.

The CONFIG.SYS File Settings

The installation program adds the following statements to the CONFIG.SYS file:

```
DEVICE=C:\WINDOWS\HIMEM.SYS  
DEVICE=C:\WINDOWS\EMM386.EXE
```

Understanding the System Resource Settings

This section explains the following software SB emulation resources—not hardware resources—of your card:

- ☐ Input/Output (I/O) Addresses
- ☐ Interrupt Request (IRQ) Line
- ☐ Direct Memory Access (DMA) Channel



If your card encounters a conflict with a peripheral device, you may need to change its resource settings. For details, see “Resolving I/O Conflicts” on page D-3. When any resource setting is changed, make sure that the environment variables (see “Understanding the Environment Variables” on page B-3) reflect the changes as well. You can view your system environment by typing **SET** at the DOS prompt.



In the following tables, the preferred values are in bold.

Input/Output (I/O) Addresses

I/O addresses are communication areas used by your computer’s central processor to distinguish among various peripheral devices connected to your system when sending or receiving data.

Table B-1: Possible default input/output (I/O) addresses.

Device	Default I/O Address Range
SB interface	220H to 22FH 240H to 24FH 260H to 26FH 280H to 28FH
MPU-401 UART MIDI interface	300H to 301H 310H to 311H 320H to 321H 330H to 331H
Stereo music synthesizer	388H to 38BH

Interrupt Request (IRQ) Line

An IRQ line is a signal line that a device uses to notify your computer's central processor that it wants to send or receive data for processing.

Table B-2: Possible default interrupt request (IRQ) line assignment.

Device	Default IRQ Line
SB interface	5, 7, 9, 10

Direct Memory Access (DMA) Channel

A DMA channel is a data channel that a device uses to transfer data directly to and from the system memory.

Table B-3: Possible default direct memory access (DMA) channel assignment.

Usage	Default DMA Channel
First DMA channel	0, 1, 3
Second DMA channel	5, 6, 7

Understanding the Environment Variables

Environment variables are used to pass hardware configuration information to the software in your system. For MS-DOS, your audio card includes the following:

- ☐ CTSYN Environment Variable
- ☐ BLASTER Environment Variable

CTSYN Environment Variable

The CTSYN environment variable points to the location of the CTSYN.INI file, which usually resides in the Windows directory. The syntax for this variable is as follows:

CTSYN=path

where path is the location of the CTSYN.INI file.

BLASTER Environment Variable

The BLASTER environment variable specifies the base I/O address, IRQ line, and DMA channels of the SB interface. Its syntax is:

BLASTER=A220 I5 D1 H5 P330 T6

The parameters in the command are as follows.

This

Parameter	Specifies
Axxx	SB interface's base I/O address.
Ix	IRQ line used by the audio interface.
Dx	First DMA channel used by the audio interface.
Hx	Second DMA channel used by the audio interface.
Pxxx	MPU-401 UART interface's base I/O address.
Tx	Card type. x must be 6.

Determining Resources

To find the current SB PCI512 SB16 Emulation resources in Windows 95/98:

1. Click the Start button, point to Settings, and then click Control Panel.
2. In the Control Panel window, double-click the System icon.
3. In the System Properties dialog box, click the Device Manager tab.

4. Double-click Creative Miscellaneous Devices, and then double-click Creative SB PCI512 SB16 Emulation.
5. Click the Resources tab.

You can use the information in the resource list to help you configure MS-DOS games for use with the SB PCI512 card.

The resource list may show three entries of “Input/Output Range” and two entries of “Direct Memory Access”. They correspond to the sequence of entries in Table 1 and Table 3. If the number of entries do not match, a good estimate of the identity of the device is its I/O address or DMA channel.

To find the current SB PCI512 SB16 Emulation resources in MS-DOS mode:

1. Switch to your SB PCI512 DOS driver directory, that is:
C:\PROGRA~1\CREATIVE\SBPCI512\DOSDRV
2. Type **SBECFG** and then press <Enter>.



The MS-DOS driver SBEINIT.COM must be running for SBECFG.EXE to work properly.

Some older games may have difficulty detecting the SB PCI512 card at certain resource settings. Typically, these games would expect the card to be at a fixed set of resources and would fail to load if those resources are not detected. If you have older MS-DOS games that do not work properly, try changing the SB PCI512 SB16 Emulation configuration. Use the following as a guide:

Problem: Sound Blaster emulation is not recognized.

Resource: Try switching the SB Emulation IRQ between 5 and 7, use DMA channel 1, use SB interface port 220.

Problem: The MPU-401 emulation is not recognized.

Resource: Try using Port address 330.

Selecting the Best Audio Options in a Game

Most MS-DOS-based games that provide sound have some procedure for audio setup. These procedures generally present you with a list of popular audio cards or audio devices from which to choose.

The methods used by games to present audio options can vary greatly. Some may present a single choice that corresponds to a particular audio device, that is, Sound Blaster, Sound Blaster 16, Roland Sound Canvas, and so on. Others will provide an option for music and digital audio separately; for example, General MIDI music with Sound Blaster digital audio. In such a case, there are often two separate menus to configure.

Some games allow you to set the MIDI port address and IRQ for music and sound. Make sure that these settings correspond to the values displayed by SBECFG.EXE or the

Resources tabbed page of the Creative SB PCI512 SB16 Emulation Properties dialog box.

There are games that offer MPU-401/Roland (General MIDI or MT-32/LAPC-1) as an option. Often these games allow you to set the MIDI port address. Make sure that they match the MIDI address in the Resources list on Resources tabbed page of the Creative SB PCI512 SB16 Emulation Properties dialog box. The same values can be found under “MPU-401 (General MIDI, Roland MT-32/LAPC-1) Emulation”, displayed by SBECFG.EXE in MS-DOS mode. Remember to enable the MT-32 MIDI patch with the SBEMIXER program if you select Roland MT-32 or LAPC-1 for music.

Music Options

Most MS-DOS games offer a menu choice for sound when they start up. If you have a choice between General MIDI and MT-32, always choose General MIDI, since it will provide you with the best sound quality. If you need to use MT-32, you must first switch from the General MIDI instrument set (the default) to the MT-32 instrument set using SBEMIXER. Be sure to switch back to the General MIDI set when you are finished using the MT-32 instrument set.

Digital Audio Options

SB PCI512 supports Sound Blaster, Sound Blaster Pro, Sound Blaster 16, and Adlib digital audio emulation. If an application provides all these as options, specify the choices in this order:

1. Sound Blaster 16
2. Sound Blaster Pro
3. Sound Blaster
4. Adlib

MS-DOS Mode Utilities

The SB PCI512 card includes a few MS-DOS utilities. These utilities require the SB PCI512 DOS driver SBEINIT.COM to be loaded.

SBECFG.EXE

Use the SBECFG.EXE utility to obtain the hardware settings and the status of the SB PCI512 card. Typing **SBECFG.EXE** at the command prompt displays the following hardware settings:

- ☐ PCI Hardware Settings: Port, IRQ
- ☐ Sound Blaster Emulation: Port, IRQ, DMA
- ☐ MPU-401 Emulation (GM, Roland MT-32/LAPC-1) Emulation: Port
- ☐ Adlib Emulation: Port

The emulation settings appear only if they are enabled.

SBEMIXER.EXE

Use SBEMIXER.EXE to change the volume levels of the MPU-401 instrument set used on the SB PCI512 card. You can use SBEMIXER.EXE from the command line—useful for advanced users who want to set up batch files with particular volume levels—or within the SBEMIXER screen. The settings for SBEMIXER.EXE are independent of the Creative Mixer settings in Windows 95/98.

To set SBEMIXER values in the command line:

- At the DOS prompt, type the SBEMIXER command in a single line. Its syntax is:
SBEMIXER [/S:x] [/W:x] [/C:x] [/M:x] [/?]
where square brackets [] denote optional parameters, and:

This

Parameter	Specifies
/S:x	Synth volume. <i>x</i> can be a value from the range 0 to 127.
/W:x	Wave volume. <i>x</i> can be a value from the range 0 to 127.
/C:x	CD audio volume. <i>x</i> can be a value from the range 0 to 127.

/M:x Synth MT-32/LAPC-1 mode.
For *x*, 0 is Off, 1 is On.
/? View a short description of the parameters.

An example of an SBEMIXER command is

SBEMIXER /S:64 /W:120 /C:50 /M:0

which corresponds to “set the synth volume to 64, the Wave volume to 120, the CD audio volume to 50, and turn off the Synth MT-32/LAPC-1 mode”.

To set SBEMIXER values within the Mixer screen:

- At the DOS prompt, type

SBEMIXER

The interactive editor mode allows you to change the mixer settings with the mouse, <Tab>, <PgUp>, <PgDn>, or arrow keys.

Use the Save button to save the settings for the next session.

SBESET.EXE

Use SBESET.EXE to manually configure SB resources or disable SB Emulation. By default, SB Emulation in DOS follows the Windows settings. For example, if you disable SB Emulation in Windows, in the next boot to DOS SB Emulation in DOS disabled. Under rare circumstances you may need to manually reconfigure DOS SB Emulation, for example, if there is conflict in DOS before it can boot to Windows. SBESET.EXE is run from the command line.

To set SBESET values in the command line:

At the DOS prompt, type the SBESET command in a single line. Its syntax is:

`SBESET [-Axxx] [-Ix] [-Dx] [-Hx] [-Pxxx] [-dx] [-wx]`

where square brackets [] denote optional parameters, and:

This

Parameter	Specifies
-Axxx	SB interface's base I/O address.
-Ix	IRQ line used by the audio interface.
-Dx	First DMA channel used by the audio interface.
-Hx	Second DMA channel used by the audio interface.

-Pxxx	MPU-401 UART interface's base I/O address.
-dx	SB Emulation mode. For x, 1 is Off, 0 is On.
-wx	Set x to 1 to use the Windows-assigned resource configuration. Set x to 0 to use (your) user-assigned resource configuration.



See “Understanding the System Resource Settings” on page B-2 for a list of possible values.

An example of an SBESET command is

SBESET -A240 -I5 -D3 -w0

which corresponds to “set the SB interface's base I/O address to 240, the IRQ line used by the audio interface to 5, the First DMA channel used by the audio interface to 3, and use the Windows-assigned resource configuration”.

SBEGO.EXE

Use this to confirm whether SB16 Emulation is properly installed and working.

Appendix

Changing Audio Card Settings

You might want to disable interfaces that you are not using to free up resources, for example, when you do not have enough IRQ lines.

This appendix is organized as follows:

- ☐ Enabling/Disabling Gameport Joystick Interface
- ☐ Enabling/Disabling Other Features

Enabling/Disabling Gameport Joystick Interface

The Gameport Joystick interface on your audio card can be enabled or disabled in Windows 95/98.

To enable or disable the interface in Windows 95/98:

1. Click the Start button, point to Settings, and then click Control Panel.
2. In the Control Panel window, double-click the System icon.
3. In the System Properties dialog box, click the Device Manager tab.

4. Double-click Sound, Video And Game Controllers, and then select Creative Gameport Joystick.
5. Click the Properties button.
6. In the Properties dialog box:

If you have an Original Configuration (Current) check box:

- To enable the interface, make sure that the check box is selected.
To disable it, clear the check box.

If you have a Disable In This Hardware Profile check box:

- To enable the interface, clear the check box.
To disable it, make sure that the check box is selected.

7. Click OK to restart Windows and for the change to take effect.

When the Gameport Joystick interface is disabled, the entry in Device Manager has a red cross.

Enabling/Disabling Other Features

In Windows 95/98 and Windows NT 4.0

Use the applications in Creative Launcher, particularly those found in your Sound Blaster and Creative AudioHQ tabs.

Appendix

Troubleshooting

This appendix provides tips for solving problems you may encounter during installation or normal use.

Problems Installing Software

In Windows 95/98, the installation does not start automatically after the CD-ROM is inserted.

The AutoPlay feature in your Windows 95/98 system may not be enabled.

To start the installation program through the My Computer shortcut menu:

1. Double-click the My Computer icon on your Windows desktop.
2. In the My Computer window, right-click the CD-ROM drive icon.
3. On the shortcut menu, click AutoPlay and follow the instructions on the screen.

To enable AutoPlay through Auto Insert Notification:

1. Click the Start button, select Settings, and then click Control Panel.
2. In the Control Panel window, double-click the System icon.
3. In the System Properties dialog box, click the Device Manager tab and select your CD-ROM drive.
4. Click the Properties button.
5. In the Properties dialog box, click the Settings tab and select Auto Insert Notification.
6. Click the OK button to exit from the dialog box.

Problems With Sound

There is unexpected excessive environmental sound or effects when an audio file is being played.

The last selected preset is an inappropriate environment for the current audio file.

To switch to an appropriate environment:

1. Open Environmental Audio Control applet.
OR
Display Creative Launcher at the top or bottom of your screen (bring your mouse pointer to the top edge of the screen to display Launcher). Then, click the Environments tab.
2. In the Environment list, select “No effects” or an appropriate environment.

No sound from the headphones.

Check the following:

- ☐ The headphones are connected to the Line Out jack.
- ☐ In the Speaker applet (click the AudioHQ icon on the taskbar, and then click the Speaker icon), make sure the Output field is set to Headphones.

In a 4-speaker configuration, there is no sound from the rear speakers.

Check the following:

- ☐ The rear speakers are connected to the audio card's Rear Out jack.



If, instead, you decide to select the “What U Hear” device icon in the Record Control view, then of these five sources in the Play Control view, you can unmute only one at a time. Therefore, you can get sound from the rear speakers only from the unmuted source.

- ☐ If you are playing sound from one of these sources.
 - CD Audio
 - Line In
 - TAD
 - Auxiliary (AUX)
 - Microphone

To solve the problem:

1. In Creative Mixer's Play Control view, make sure the check box of the source being played is unmuted, that is, enabled.
2. In the Record Control view, make sure the corresponding check box is also selected.
For example, if you are playing DVD games or movies, make sure in Creative Mixer you unmute the Auxiliary device in

the Play Control view and select the Auxiliary device in the Record Control view.

- ☐ If you have changed environments, go to the Record Control view of Creative Mixer and make sure that the check boxes of your active sources are selected.

No audio output when playing digital files such as WAV, MIDI files or AVI clips.

Possible causes:

- ☐ The speaker volume knob (if any) is not set properly.
- ☐ The external amplifier or speakers are connected to the wrong jack.
- ☐ There is a hardware conflict.
- ☐ The output selection in the Configuration tabbed page of the Speaker applet is incorrectly selected.
- ☐ The Original Sound slider in the Master tabbed page of the Environmental Audio applet is set at or near 0%.

Make sure that:

- ☐ The speakers' volume control knob, if any, is set at mid-range. Use Creative Mixer to adjust the volume, if necessary.
- ☐ The powered speakers or external amplifier are connected to the card's Line Out or Rear Out jack.

- ☐ No hardware conflict between the card and a peripheral device. See “Resolving I/O Conflicts” on page D-3.
- ☐ The output selection in the Speaker applet corresponds to your speaker or headphone configuration.
- ☐ The Original Sound slider in the Master tabbed page of the Environmental Audio applet is set to 100%.

No audio output when playing CD-Audio.

OR

No audio output when playing DOS games that require a CD-ROM.

To solve this problem:

- Make sure the CD audio cable between the CD-ROM drive and the audio card is connected.

Insufficient SoundFont Cache

There is insufficient memory to load SoundFonts.

This may occur when a SoundFont-compatible MIDI file is loaded or played.

Cause: There is insufficient memory allocated to SoundFonts.

To use a smaller SoundFont bank:

- On the Configure Banks tabbed page of the SoundFont Control applet, select a smaller SoundFont bank from the Select Bank box.
The smallest SoundFont bank available is 2 MB (2GMGSMT.SF2).



The trade-off of a smaller SoundFont bank is its lower sound quality.

Problems With Joystick

The joystick port is not working.

The audio card's joystick port conflicts with the system's joystick port.

To solve this problem:

- Disable the audio card's joystick port and use the system port instead. For details, see "Enabling/Disabling Gameport Joystick Interface" on page C-1.

The joystick is not working properly in some programs.

The program may use the system processor timing to calculate the joystick position. When the processor is fast, the program may determine the position of the joystick incorrectly, assuming that the position is out of range.

To solve this problem:

- Increase your system's 8 bit I/O recovery time of the BIOS setting, usually under the Chipset Feature Settings section. Or, if available, you may adjust the AT Bus speed to a slower clock. If the problem persists, try a different joystick.



Do not attempt to make changes to the BIOS unless you have experience with system software.

Resolving I/O Conflicts

Conflicts between your audio card and another peripheral device may occur if your card and the other device are set to use the same I/O address.

To resolve I/O conflicts, change the resource settings of your audio card or the conflicting peripheral device in your system using Device Manager in Windows 95/98.

If you still do not know which card is causing the conflict, remove all cards except the audio card and other essential cards (for example, disk controller and graphics cards). Add each card back until Device Manager indicates that a conflict has occurred.

To resolve hardware conflicts in Windows 95/98:

1. Click the Start button, point to Settings, and then click Control Panel.
2. In the Control Panel window, double-click the System icon.
3. In the System Properties dialog box, click the Device Manager tab.
4. Under the Sound, Video And Game Controllers entry, select the conflicting audio card driver—indicated by an exclamation mark (!)—and click the Properties button.
5. In the Properties dialog box, click the Resources tab.

6. Make sure that the Use Automatic Settings check box is selected, and click the OK button.



You can also refer to the Troubleshooting section in the Help file of Windows 95/98.

7. Restart your system to allow Windows 95/98 to reassign resources to your audio card and/or the conflicting device.

Problems in Windows NT 4.0

A Service Control Manager error message appears with one or more other error messages at system restart.

This occurs after you remove an audio card from your computer after you have successfully installed the Sound Blaster PCI512 card. Windows is trying to match the drivers to the removed audio card.

To solve this problem:

1. Log on to your computer as Administrator.
2. Click the Start button, point to Settings, and then click Control Panel.
3. Double-click the Multimedia icon, and then click the Devices tab.
4. In the list, remove from under these entries

- Audio Devices
- MIDI Devices And Instruments

the items other than

- Audio for Creative SB PCI512
 - MIDI for Creative SB PCI512
 - MIDI for Creative S/W Synth
5. Click the OK button to close the dialog box.
The drivers are removed.

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